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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/036,927	10/19/2001	Arnab Das	13-17-14-1	5034
30594	7590	07/26/2005	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 8910 RESTON, VA 20195			ADHAMI, MOHAMMAD SAJID	
			ART UNIT	PAPER NUMBER
			2662	

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/036,927	DAS ET AL.	
	Examiner	Art Unit	
	Mohammad S. Adhami	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>11/4/2002</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "102" has been used to designate both a frame and a time slot. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: On page 4 line 20, a reference is cited; however, the U.S. Patent Application Serial No. for the reference is missing.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. Claims 15-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 15-17, it is not clear what format is being referred to in "transmission format". It is not clear whether it relates to the altogether code domain, frequency domain, or space domain or a to a different thing.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-13, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Kwan (US App No. 10/184,022).

Re claim 1:

Kwan discloses an optimized adaptive modulation technique utilizing fixed length frames, each divided into time slots of equal duration (Paragraph [0078] "3 slots = 2ms"), transmitting a code multiplexed transmission where the number of codes is variable based on the communication channel (Paragraph [0011] "selecting a number of channelization codes and a modulation and coding scheme from among a plurality of MCs...according to sad time varying radio link quality").

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Re claim 2:

Kwan teaches redundancy that is a function of the number of codes (Paragraph 0021 "selecting an MCS capable of achieving a specified error measure" and Table 3). If the quality of the channel falls below a certain level, the amount of code used is increased to compensate for the lower quality, as shown in Table 3. The increase in code increases the amount of redundancy as well.

Re claim 3:

Kwan determines the condition of a channel based on quality-based parameters and available resources (Paragraph [0012] "allowed channelization codes are listed..only code channels are listed that provide a higher bit rate").

Re claim 4:

Kwan discloses transmission of a combination of one or more signal transmissions (Paragraph [0190] "Node B could allocate UE1 QPSK $\frac{1}{2}$ with 4 codes...and UE2 QPSK $\frac{3}{4}$ with 6 codes").

Re claim 5:

Kwan discloses a method where the number of codes for a first transmission the same as the number of codes for a subsequent transmission (Paragraph [0057, 0069] "N=number of channelization codes used/user" and "the value for N can remain the same").

Re claim 6:

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Kwan discloses a method using different number of codes for a first transmission and a subsequent transmission (Paragraph [0057, 0067]

"N=number of channelization codes user/user" and "N will be increased again to increase the number of codes used per user").

Re claim 7:

Kwan discloses a method "capable of carrying multiple simultaneous transmissions by using one or more different codes for each of the multiple simultaneous transmissions" (Paragraph [0190] and Table 3 "Ue1 QPSK $\frac{1}{2}$ with 4 codes... UE2 QPSK $\frac{3}{4}$ with 6 codes").

Re claim 13:

Kwan discloses frames with duration of 2 milliseconds and a plurality of slots, each 0.67 milliseconds (Paragraph [0078] "length in HSDPA ... is 3 slots = 2 ms" and Figure 7).

Re claim 20:

Kwan discloses a method that transmits a ACK/NACK in the same frame for the same user (Paragraph [0079] "ack/nak will reserve 1 slot").

Re claims 1-13, 20:

Kwan discloses a method that is capable of retransmission. It is inherent in the design of the method for first transmissions. A retransmission follows the same method as a retransmission, so when Kwan has a method that takes the quality of the channel is taken into consideration this applies to retransmissions as well because they use the same method.

Subsequently, [Claim 4] Kwan is capable of transmitting a combination of new transmissions and previous transmissions, because they use the same method. [Claims 8-12] It is inherent that multiple simultaneous transmissions include [Claim 8] a plurality of first transmissions from different users, [Claims 9 and 10] retransmissions of previous transmissions from the same or different users, [Claims 11 and 12] first transmission and one or more retransmission from the same or different users.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kwan in view of Bolgiano (US 6,366,568).

Re claims 14-19:

[Claims 14-19] As discussed above, Kwan discloses a method using fixed length frames and sending a retransmission of a previous transmission. Kwan further discloses using ARQ (Paragraph [0131] "different transport channels should have separate HARQ processes"). Kwan also discloses transmitting in a code and frequency domain (Figure 5. "Coding and Multiplexing" and Paragraph [0007] "on top of the benefits attributed to fat-pipe multiplexing, AMC combined

with time domain scheduling"). [Claim 16] Kwan additionally discloses defining the frequency domain with modulation and code (Table 3).

Kwan fails to disclose using a transmission domain selected from a space domain and defining the transmission formats based on certain parameters.

[Claims 14-19] Bolgiano discloses a method using code domain, frequency domain, and space domain (Col. 2 lines 27-29 "using time division multiple access (TDMA) in various combinations with CDMA and space diversity antennas"). [Claims 16, 18, and 19] Bolgiano also discloses defining the code, frequency, and space domains parameters (Col. 3 lines 2-3 and 7-10 "system using CDMA to modulate a TDMA signal which is transmitted from three space diversity antennas" and "TDMA signals used to transmit multiple repetitions of the same data packet...one of the three space diversity antennas"; Col. 16 line 43 "each antenna is assigned a separate center frequency"; Col. 17 lines 12-14 "the transfer station converts the TDMA protocol to a time slotted CDMA triple space/time diversity air interface protocol"; Col. 17 lines 35-36 "the PN code continues to run and is different during each time slot").

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kwan to use the space domain in transmission and define the transmission domains based on certain parameters as taught by Bolgiano in order to provide a space diversity system that would prevent fading.

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Conclusion


5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tanaka (US 5,781,542) and Proctor (US App. No. 09/845,240) both disclose modulation and coding schemes based on channel parameters. Haartsen (US 6,650,630) discloses a fixed frame length. Hwang (US App. No.10/115,349) discloses ACK/NACK and ARQ being used.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammad S. Adhami whose telephone number is (571)272-8615. The examiner can normally be reached on Monday-Friday 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571)272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MSA
MSA 7/21/2005


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